

# COLLEGE AND CAREER READINESS:

# WHAT DO WE MEAN?

—Maria's  
Story







ready

ready

Success

skills

approach

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BY SVETLANA DARCHE AND BRAD STAM

**T**he following story is based on that of a San Francisco Bay Area community college student. Maria thought she wanted to work in the health care field...maybe she would even become a doctor one day. However, she was bored in school and found it hard to engage in learning. She says, "My parents wanted me to get an education, but they were both working two jobs—it was hard for them to follow what I was doing. And realistically, I had no idea what I'd have to do to become a doctor!"

Maria recounts how her experience began to turn around in the 10th grade when her high school created a health academy. The academy established high expectations for its students: every student would be prepared for the full range of postsecondary education opportunities, and for the world of work. The academy assessed not just specific knowledge recall, but also communication, collaboration, critical thinking and problem-solving skill proficiency. The academy's academic program of study ensured that Maria could gain entry to, and succeed in, community college or university.

Maria also took a demanding technical health course sequence that built specific technical knowledge and skills. The health theme and interdisciplinary approach made Maria's learning much more interesting and helped her "connect the dots." In world history she learned about global health issues, and through her civics and economics courses she learned about the cost of health care and the complex interconnections between health care, education and jobs.

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**"Best of all," Maria recalls, 'I learned by doing. School started to seem more real to me. We had projects that were fun and challenging—that made me do more than just memorize facts. I had to really know what I was talking about and present in front of a group!'"**

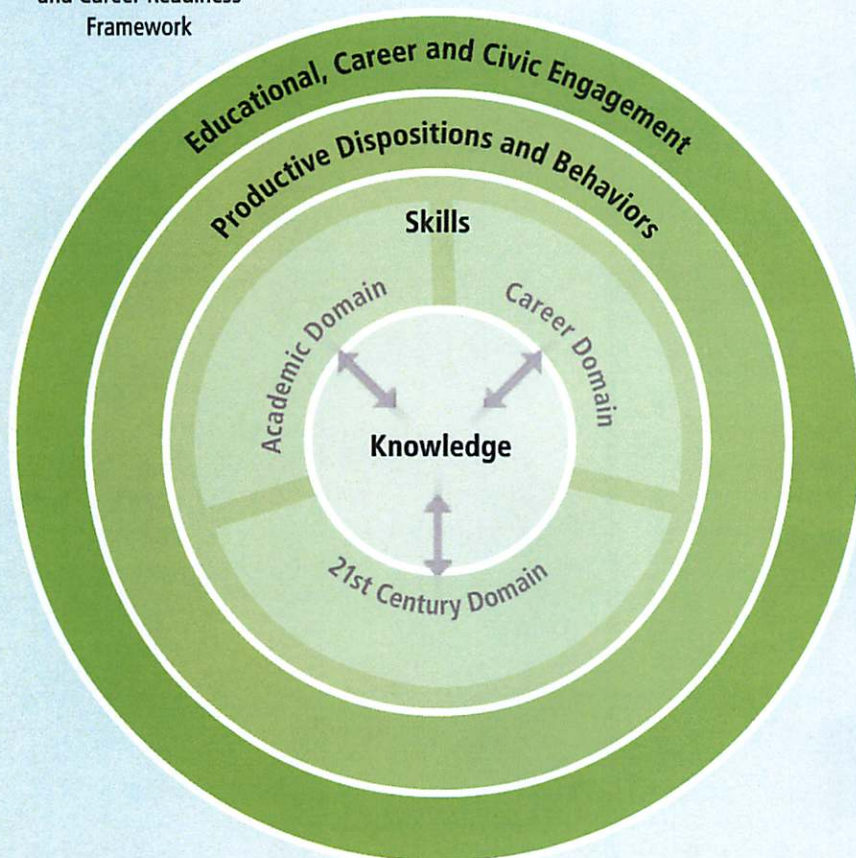
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When Maria's confidence flagged, teachers, tutors and peers worked together to analyze, understand and address the difficulties. This helped Maria to focus, persist and learn about her own learning needs and strategies for overcoming challenges. "Best of all," Maria recalls, "I learned by doing. School started to seem more real to me. We had projects that were fun and challenging—that made me do more than just memorize facts. I had to really know what I was talking about and present in front of a group!"

As part of the school's service requirement, Maria organized an outreach campaign to let local families know about the new health care services at the community clinic; she and her teammates



**Figure 1: College and Career Readiness Framework**



#### **I. Knowledge**

- A. Core subject-area content
- B. 21st century knowledge: global, civic, environmental, financial, health, and media literacy
- C. Career-related and technical knowledge: knowledge about a broad industry sector and associated technical content and college majors

#### **II. Skills**

- A. Academic skills in core disciplines
- B. 21st century skills
  - 1. Metacognition and knowing how to learn
  - 2. Creativity and innovation
  - 3. Critical thinking and problem solving
  - 4. Systems thinking
  - 5. Communication: listening, speaking, writing, and nonverbal communication
  - 6. Collaboration and working with diversity

- 7. Information management and digital media applications

- C. Technical skills: technical skill in at least one career area of interest

#### **III. Productive Dispositions and Behaviors**

- A. Productive self-concept: self-knowledge, self-esteem, self-efficacy
- B. Self-management: goal setting, time management, study skills, precision and accuracy, persistence, initiative/self-direction, resourcefulness, and task completion
- C. Effective organizational and social behavior: leadership, flexibility/adaptability, responsibility, and ethics

#### **IV. Educational, Career, and Civic Engagement**

- A. Engaging in and navigating the world of higher education
- B. Engaging in and navigating the world of work
- C. Engaging in and navigating civic life

came up with several creative ideas to address what had always been a problem in Maria's neighborhood. The clinic put their ideas into action. Over the following six months, enrollment in pre-natal services increased by 50 percent!

In her junior year Maria did an internship at the community hospital. "I helped people who were sick. I had real responsibility. I felt important. I loved being part of a team too; we had to work together well for the patients' sake, so everyone put in their all. And I realized how important it was to do things carefully—you can't mess around when you are drawing blood! I felt really competent for the first time in my life. It kept me motivated in school, even though my courses were really hard."

Some of Maria's academy courses were linked to the biology program at the local community college. In her senior year, she was able to see what college was like and to talk with professors and other college students. She realized students had figured out how to get the help they needed on campus—including financial aid. At one session, bilingual counselors helped Maria and her parents fill out the forms.

Maria also learned about a range of career options within the health care field and beyond. She discovered health care administration and that it required business skills as well as knowledge of health care issues. During a career assessment with her counselor, she recognized that her organizational skills were helping to keep things moving smoothly at home—keeping the family calendar, getting her little sisters off to school when her parents were already out of the house, translating documents from the school or bank—and that this was a skill set that would also serve her well at work later on.

She says, "I decided that after I graduated from high school, going to a community college would let me save money and help my parents a little longer."



After the two years, I could transfer to a four-year university." The academy counselor made sure that Maria made a smooth transition to the college. In addition, he reviewed what coursework she could take that would allow her to transfer to the university.

Maria's experience in the academy allowed her to get her emergency medical technician (EMT) certificate while at the community college and also earn a good salary working part-time. She took business courses at the community college in addition to her other requirements. With this background, she had a full range of options before her. She was looking forward to transferring to the University of California, pursuing a career in health care administration and serving her community.

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**"The aim of our efforts was to synthesize research and perspectives based on a holistic view of student needs and considering long-range educational, economic and societal trends."**

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### **What Does the Research Say?**

Maria's story illustrates how one school has responded to an emerging nationwide consensus that all U.S. students should graduate from high school "ready for college and career." This developing consensus is exemplified in a document published jointly in 2010 by the National Association of State Directors of Career Technical Education Consortium

(NASDCTEc), the Association for Career Technical Education (ACTE), and the Partnership for 21st Century Skills. The report, titled "Up to the Challenge: The Role of Career and Technical Education (CTE) and 21st Century Skills in College and Career Readiness," addresses "the growing skills deficit in the United States." It calls for breaking down "the silos between academic, CTE and 21st

training, workforce development, education, aerospace, defense, alternative energy, sustainable energy, automotive, chemical, construction, engineering, economic development, financial services, insurance, health care, high-tech manufacturing, industrial manufacturing, life sciences, metals manufacturing, oil & gas, professional services, government, commercial/industrial real estate development, real estate brokers, consultants, retail/wholesale distribution, transportation, logistics, utilities, bio-tech, site selectors, architects, venture capital firms, agriculture, food service, environment, plastics, medical devices, research and development, fabricated metals manufacturing, industry perspectives, visionaries and strategies, innovative opportunities, quality places, profiles, enhanced media messaging, timely/informative content, corporate professionals

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**"As exemplified in Maria's story, there is broad agreement that academic preparation is foundational, especially in an era when it is projected that, over the next decade, the share of jobs requiring some postsecondary education will rise to 63 percent (Carnevale, Smith and Strohl)."**

century education initiatives, programs and teachers" and arriving at a "unified vision of college and career readiness." In the spirit of this report, ConnectEd<sup>1</sup> and WestEd<sup>2</sup> have partnered to further clarify the definition of college and career readiness, based on the skills, knowledge and other competencies that research has shown are necessary for student success beyond high school—in postsecondary education, careers and civic life.

The aim of our efforts was to synthesize research and perspectives based on a

holistic view of student needs and considering long-range educational, economic and societal trends. In addition to reviewing the relevant literature, we consulted with educators and experts across a broad spectrum—each illuminating a critical piece of the overall picture.

As exemplified in Maria's story, there is broad agreement that academic preparation is foundational, especially in an era when it is projected that, over the next decade, the share of jobs requiring some postsecondary education will rise to 63

percent, according to a 2010 report "Help Wanted: Projections of Jobs and Education Requirements Through 2018," by Anthony P. Carnevale, Nicole Smith and Jeff Strohl. Academic preparation for college and careers is defined in various ways: by state academic standards, by reading and mathematics knowledge and skills as measured by the National Assessment of Educational Progress (NAEP)<sup>3</sup>, and, in many states, by the Common Core State Standards.

21st century technical skills and knowl-

## Using Real World Tools in the Classroom

Virginia Tech engineering student Derek Lahr made his senior design project on his graduation present, a Tormach PCNC mill.

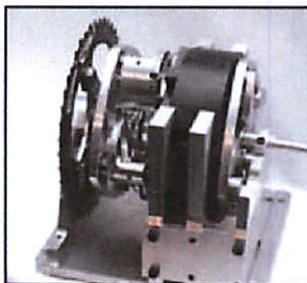
"One of my research projects at Virginia Tech was to make a continuously variable transmission (CVT) for a bicycle. To get continuously variable ratios out of the transmission, one of the parts in the cam changes shape along its length. I needed a 4th-axis CNC with a rotary table to get it done. While I was researching ways to solve the problem on the bicycle design, I discovered the Tormach mill and saw that it had 4th-axis capabilities, was economically priced, and the right size."

### For the Future

While pursuing advanced degrees at Virginia Tech, Lahr continues to use his Tormach CNC mill, making award-winning robots for the Robotics and Mechanisms Laboratory (RoMeLa) program.



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edge are also needed for success. 21st century knowledge and skills—including cross-cutting content such as health literacy and global awareness, and skills such as critical thinking, creativity and collaboration—are not new, but of increasing relevance with globalization. Career and technical knowledge and skills have always been critical, and their importance cannot be overstated during these difficult economic times. CTE is also valuable for cognitive development, through the practice of skills such as task prioritization and analytical reasoning (Rose 2006). It also promotes students' sense of self-efficacy derived from mastering complex tasks and solving real problems.

Students also need productive dispositions and behaviors for college and career readiness. While these are sometimes combined with skills such as critical thinking or other 21st century or employability skills, we have identified them separately as they support success in all domains. They are not always explicitly addressed in curriculum and often are learned outside of classrooms (Resnick 1987; Wilson-Ahlstrom, Yohalem, Dubois and Ji 2011).


Research indicates that for many students, productive dispositions and behaviors, sometimes called “noncognitive skills,” are most predictive of future earnings (Deke and Haimson 2006; Lerman 2008). Further, within the category of productive dispositions and behaviors, we found important distinctions among self-concepts (such as self-efficacy and self-esteem), self-management (goal-setting, time-management, persistence), and effective organizational behaviors (such as responsibility to others); these are all learned and assessed differently.<sup>4</sup>

The strategies needed to successfully transition to postsecondary education, work and civic life are also distinct from other nonacademic or behavioral competencies. We have called these “education, career and civic engagement.” They encompass the practical skills needed to

navigate college life, workplaces and civic institutions and to manage one's progress over time. While rarely taught, these strategies are critical for success.<sup>5</sup>

The framework and graphic on page 22 highlight the distinct categories that we believe schools, districts and states must address directly in order to better achieve secondary education's goal of graduating all students “college- and career-ready.”

## Implications for Schools

Using the framework to prepare students will require new curriculum and instructional strategies, new and more authentic assessments, and new teacher preparation and professional development. It will also require district and school leaders to rethink school organization to emphasize personalization, collaboration and the integration of CTE and academic subjects through rigorous projects and work-based experiences in which students can apply and hone critical 21st century skills. For more information on how to get started, visit [www.connectedcalifornia.org](http://www.connectedcalifornia.org) and [www.wested.org](http://www.wested.org). 

## Endnotes

- 1 For more information about ConnectEd, visit [www.connectedcalifornia.org](http://www.connectedcalifornia.org).
- 2 For more information about WestEd, visit [www.wested.org](http://www.wested.org).
- 3 The National Assessment Governing Board (NAGB) which sets policy for the National Assessment of Educational Progress (NAEP) defines academic preparedness for college as “the reading and mathematics knowledge and skills necessary to qualify for placement into entry-level college credit courses that meet general education requirements without the need for remedial coursework. For the workplace, academic preparedness refers to the reading and mathematics knowledge and skills needed to qualify for job training” (NAGB, n.d.).
- 4 A National Research Council panel on Assessing 21st Century Skills organized skills into three categories: cognitive, intrapersonal, and interpersonal, with the recognition that intra- and interpersonal skills required cognition.
- 5 David Conley, CEO of Educational Policy Improvement Center, has highlighted the importance of transition skills, especially for students from underserved populations.

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Svetlana Darche, MBA,

is senior research associate at WestEd. She has been working with ConnectEd, the California Center for College and Career, on “College and Career Readiness: What Do We Mean? A Proposed Framework,” on which this article is based. A special thanks to Janice Agee, communications specialist, WestEd, for an early draft of Maria's story. Darche can be contacted at [sdarche@wested.org](mailto:sdarche@wested.org).

Brad Stam

is the vice president of ConnectEd: The California Center for College and Career. ConnectEd supports districts seeking to build systems of high quality Linked Learning pathways that integrate academic, technical and work-based education within smaller, personalized learning environments in secondary schools. He can be reached at [bstam@connectedcalifornia.org](mailto:bstam@connectedcalifornia.org).



# CAREER READINESS:

ARE WE THERE YET?





BY CHRISTOPHER GUIDRY

In a second grade classroom in Grand Junction, Colorado, 28 seven- and eight-year-old students sit in wide-eyed amazement as they learn that the water they drink, bathe in or use to water their lawn is not free to their family. “Not free, Mrs. Hays?” one student asks. “You’ve got to be kidding!”

The lesson, designed in part to meet the state’s personal financial literacy standard and titled “Money Doesn’t Grow on Trees,” informs students that their parents likely have jobs for which they are paid, providing money to pay for water and other family necessities. The students are encouraged to prepare themselves for a job and career as they consider their short- and long-term goals. It’s a lot for a seven-year-old to consider.

However, in only 10 to 16 years, society will be very interested in knowing whether these children are workplace ready when it’s their time to earn an income—as will their parents, community leaders and the students themselves.

The nature and motivation for ACT’s commitment to working with career and technical educators is to prepare Mrs. Hays’ students—and others like them—to meet the standards of the high-performance workplace. In short, prepare them to be career- and job-ready. That commitment is a reflection of ACT’s mission: “helping people achieve education and workplace success.” After devoting more than two decades of attention to workplace skills, we share the realization that building a skilled workforce is a national priority of critical importance.

### A Gap That’s Getting Bigger

Six years into its global data collection effort, Gallup reports that one of its most important discoveries is “*what the whole*

*world wants is a good job.*” In his book *The Coming Jobs War*, Gallup Chairman and CEO Jim Clifton writes that earlier Gallup reports suggested individuals’ most desired priorities included love, money, food, shelter, safety, peace and freedom. Today, Gallup data suggest that whether in Khartoum, Cairo, Lima or Los Angeles, the most dominant thought on most people’s minds centers on having a good job.

Ironically, at a time of near-record unemployment, 500,000 to 600,000 “good” manufacturing jobs remain unfilled because there are not enough available qualified workers with the skills necessary to do the work.<sup>1</sup> ACT’s recent report “Breaking New Ground: Building a National Workforce Skills Credentialing System” ([www.act.org/research/policymakers/pdf/BreakingNewGround.pdf](http://www.act.org/research/policymakers/pdf/BreakingNewGround.pdf)) points out that the largest gap between the skill set of the available or emerging workforce and job opportunities occurs within the middle skills job category—jobs that require some education or training beyond high school, but do not require a four-year degree. Manufacturers report they are having the hardest time filling skilled production jobs that fuel companies’ ability to innovate and grow. Jobs often include a technical skill requirement—an area of study and training best addressed by the career and technical education (CTE) sector.<sup>2</sup>

ACT has spent decades assisting policy leaders and practitioners with information and data that shapes sound policy and addresses our nation’s skill gaps. ACT’s latest offering is “A Better Measure of Skills Gaps” ([www.act.org/research/policymakers/pdf/abettermeasure.pdf](http://www.act.org/research/policymakers/pdf/abettermeasure.pdf)), a research paper presenting a

**“What the commission found most disturbing was that more than half of our young people leave school without the knowledge (competencies) or foundation required to find and hold a good job.”**

methodology for conducting skill gap analysis that is replicable and applicable to economic and workforce developers, and utilizes a direct measure of skill supply and demand. Though the way we measure skill gaps is new, the issue of ensuring a sufficient supply of career- and work-ready individuals was driven by the clear economic emergency created by the national skill shortages emerging in the 1980s.

In the late ’80s and early ’90s, the disconnect between the skill set of the emerging and incumbent workforce and the requirements of the workplace came into focus as employers increasingly questioned the readiness of their job applicants. One key stimulus for ACT’s investment in workforce development tools and services was the call to action contained in the report of the Secretary’s Commission on Achieving Necessary Skills (SCANS). The report included the message that good jobs will increasingly depend on individuals who can put knowledge to work. It called for a broad range of skills, including foundational and personal skills, well beyond the focus of the traditional educational experience. What the commission found most disturbing was that more than half of our young people leave school without the knowledge



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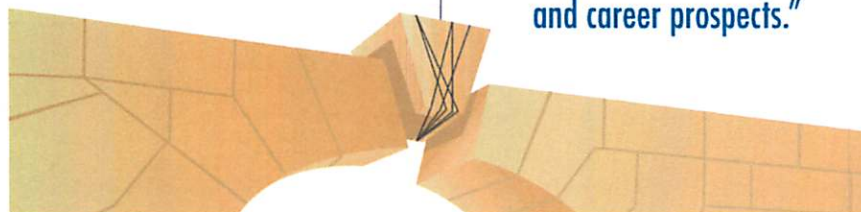


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(competencies) or foundation required to find and hold a good job.<sup>3</sup>

To ACT, it was clear that a national system was required to address a national crisis—one that permitted a detailed analysis of job requirements, an assessment of an individual's skills and competencies in relationship to the requirements of the nation's jobs, and training and educational materials that would address an individual's skill gaps.

Unfortunately for America, two decades after the SCANS report, we remain unsure of just how Mrs. Hays' students will fare in 2022.

### The Challenge in Measuring "Career-Ready"

There is no commonly held definition of "career-ready." Given the multi-faceted nature of the concept and the challenges associated with preparing individuals to be career-ready, many stakeholders have ownership in addressing the issue.

Many experts state that individuals are career-ready when they have acquired the necessary knowledge and skills to enroll and succeed in a two- or four-year college, trade school or technical school without needing remediation. The Association for Career and Technical Education's "What Is 'Career Ready'?" report states that career readiness involves three major areas: *core academic skills* and the ability to

apply those skills to concrete workplace situations; *employability skills*, such as critical thinking and responsibility; and *technical, job-specific skills* related to a specific pathway.

Clearly, the technical, job-specific skill set of a particular job or occupation is important and can be measured. However, job-specific skills are not as transportable or transferable across occupations and tend to result in a certification or licensure. It is estimated that there are nearly 700,000 different credentialing possibilities if you tally all certificates, certifications and licensure programs. However, they lack the common ground necessary to permit the alignment of resources to effectively address skill gaps. This alignment is most likely to occur at the job-related foundational skill level.

A number of frameworks (based on employer surveys and research) have been developed over the years, which have identified the personal characteristics, knowledge and skills demanded of workers operating within a 21st century global economy. All of the frameworks share a common premise: foundational cognitive and behavioral skills are essential for career readiness.

### Foundational Cognitive Skills

Foundational skills are portable cognitive and behavioral skills that almost everyone

needs for almost any job. They are foundational in that they serve as the foundation for supporting additional operations/tasks and learning. They are portable because, rather than being job-specific, they can be applied at some level across a wide variety of occupations.

Three core foundational cognitive skills requiring problem solving and critical thinking have been consistently identified by job experts as important for success in a wide range of jobs. Based on an extensive database of skill requirement profiles for more than 18,000 jobs across the country, ACT found that more than 75 percent of the jobs profiled required employees to have foundational skills in three areas:

- *reading for information*—the skill required to read and use text in order to do a job;
- *applied mathematics*—the skill required to apply mathematical reasoning to work-related problems; and
- *locating information*—the skill required to locate, synthesize and use information from workplace charts, graphs, tables, forms, flowcharts and diagrams.

The March 2011 edition of *Techniques* addressed the topic of career readiness certificate programs. These are programs focused on the cognitive foundational skills important across a broad cross section of jobs. Such programs are now active across 44 states, engaging employers who use the certificate in the development processes.

### Foundational Behavioral Skills

Behavioral skills are personal characteristics and behaviors that enhance an individual's interactions, job performance and career prospects. Behavioral skills include integrity and work ethic, teamwork, organizational citizenship, customer service, counterproductive workplace behaviors, and safety:



- *Integrity and work ethic* is the extent to which an individual demonstrates dependability, puts in the effort needed to complete work, has a disciplined and positive attitude toward the job, rules and regulations, and the work environment.
- *Teamwork* is the extent to which an individual demonstrates compromise, cooperation and interpersonal understanding when working in teams.
- *Organizational citizenship* is the extent to which an individual demonstrates behaviors and activities, such as helping coworkers, that go beyond the primary tasks of a job.
- *Customer service* is the extent to which an individual demonstrates a high level of attentiveness, courtesy and helpfulness in serving customers and resolving issues in a timely and satisfactory manner.
- *Counterproductive workplace behaviors* are activities like theft or absenteeism that represent violations of the standards of acceptable workplace conduct.
- *Safety* is the extent to which an individual follows safety procedures, pays attention when performing dangerous tasks, and actively works to minimize exposure to safety-related risks.

## Powerful Predictors

Foundational cognitive and behavioral skills are complementary, and their combination provides individuals with the best preparation to perform successfully on any job. Research shows that combining measures of cognitive skills and behavioral skills improves the ability to predict job performance by a substantial amount over using measures of cognitive skills alone. Better prediction of job performance translates into decreased turnover and increased productivity for business and industry.

Improving the skill set of the emerging workforce will not be easy, but it is necessary and will require the combined efforts of all stakeholders—educators,

employers and government officials. In 1983, the National Commission on Excellence in Education released a report titled “A Nation at Risk.”<sup>4</sup> The report clearly showed that our educational systems were not adequately preparing students for the requirements of tomorrow’s workplace and the rigor of further education and training. It included a reference that the report was in part dedicated to the future of those students who would graduate from high school in 2000, on the assumption the report’s recommendations would result in a better-prepared graduate. It is fair to question whether that dedication has been achieved.

Given that context, what is our promise to the students in Mrs. Hays’ classroom? Let us trust that our collective efforts today will result in 28 well-prepared gradu-

ates, ready to address the requirements of whatever career path they may choose to pursue. Who knows? Perhaps one of Mrs. Hays’ students will be inspired to develop new technology resulting in free water! **I**

## Endnotes

- 1 “Bailing Point? The Skills Gap in U.S. Manufacturing,” National Manufacturing Institute with Deloitte.
- 2 “Breaking New Ground,” ACT, Inc., 2010.
- 3 SCANS Report, 1990-1992.
- 4 “A Nation at Risk: The Imperative for Educational Reform,” April 1983

### Christopher Guidry

is director of community and technical college development at ACT. Guidry was the State Director of CTE for Indiana from 2007 to 2011. He can be contacted at [chris.guidry@act.org](mailto:chris.guidry@act.org).



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